GEBZE TECHNİCAL UNIVERSITY  
CSE312

## Operating Systems

# Homework 2 Report

### How to Run?

Open the terminal and navigate to the source where the makefile directory. Then, compile the program by typing “**make**” and the .iso file will be created. Then construct the virtual machine on VirtualBox Program with connecting this file. Once executed, the program will produce output as specified by strategy 1 which is asked for in the pdf file. To clean up generated files, use “**make clean**”, which will remove the files generated.

### Directory Entry, Directory entry table and fat12 (Part 1)

#### Directory File Entry

* Each directory entry is 64 bytes, sufficient for handling arbitrary-length filenames and passwords. Directory entries are stored in clusters, with each 1 KB cluster holding 16 entries.
* Permissions, protection status, and filename exceed check are managed within the file\_attributes struct, occupying only 1 byte. This design is similar to Fig. 4.30 in the course book.
* File creation and last access times are stored using 4 bytes (2 bytes for date and 2 bytes for time), utilizing bitfields in file\_time and file\_date structs, resembling the design in Fig. 4.30.
* The reserved part of the directory entry struct is used for storing long filenames, ensuring filenames exceeding 8 characters can be accommodated effectively.

#### FAT12 Table and Block Management

* Maximum partition size is 4096 MB
* Block size is 1 KB, resulting in 4096 blocks
* FAT12 table holds 12-bit entries for each of the 4096 clusters, 6 KB (4096 clusters × 1.5 bytes per entry). Clusters marked as free using 0x000 in the FAT12 table.

### Creating an empty File System